

B

# BOCA

SOLID STEEL SASH

C. L. CHAPMAN,  
209 NORTH MAIN ST.,  
PROVIDENCE, R. I.  
PHONE UNION 1210

CATALOG  
E-22

Manufactured by  
**The Bogert & Carlough Co.**  
Paterson, New Jersey

Digitized by



ASSOCIATION  
FOR  
PRESERVATION  
TECHNOLOGY,  
INTERNATIONAL  
[www.apti.org](http://www.apti.org)

BUILDING  
TECHNOLOGY  
HERITAGE  
LIBRARY

<https://archive.org/details/buildingtechnologyheritagelibrary>

From the collection of:

Mike Jackson, FAIA

# **BOCA** **SOLID STEEL SASH**

CATALOG

E--22

Manufactured by

**The Bogert & Carlough Co.**

Paterson, New Jersey





## FOREWORD

In approaching the problem of lighting and ventilating buildings, windows made of solid steel sections offer the best solution. Such windows, ordinarily known as Steel Sash, have proved to be stronger, more durable, and more economical.

The movement toward better building adopts the use of Steel Sash for exterior walls wherever possible, thereby securing a lower wall cost, measured by square feet of light and ventilation.

Boca Steel Sash is designed and used in all varieties of buildings where the problem of wall cost, light and ventilation is considered.

## Boca Solid Steel Sash and Allied Products

### INDEX

	Page
SIDEWALL SASH	
SPECIFICATIONS	3
CONSTRUCTION	
Sections	4-5
Lock Joint	6
Weathering	7-8
Ventilators Standard	7-9
Ventilators Special (Top Sliding)	9
Hardware	9
Mullions	14
TYPES AND SIZES (Standard)	11-13
DETAILS	10
ILLUSTRATIONS	22-24
UNDERWRITERS' LABELED SASH	
CONSTRUCTION, ETC.	14
BASEMENT SASH	
CONSTRUCTION, DETAILS, ETC.	15
POWER HOUSE SASH	
DETAILS	16
ILLUSTRATIONS	17
MONITOR SASH	
CONSTRUCTION, DETAILS, ETC.	18-19
ILLUSTRATIONS	18
OPERATING DEVICES	
CONSTRUCTION, DETAILS, ETC.	19
ILLUSTRATION	18
DOORS	
CONSTRUCTION, DETAILS, ETC.	20
ILLUSTRATIONS	21
PARTITIONS	
CONSTRUCTION	20
ILLUSTRATION	21



## **Boca Pivoted Sidewall Sash**

### **SPECIFICATIONS**

#### **MATERIAL**

All sash shall be "Boca", made by The Bogert & Carlough Company, Paterson, New Jersey.

All sash shall be of solid rolled steel sections and of sizes as indicated on plans with ventilating sections where shown.

Where interior horizontal and vertical muntin bars cross they shall be joined by the Boca patented lock-joint.

#### **VENTILATORS**

All ventilators shall be horizontally pivoted two inches above the center and equipped with external hinges.

The weathering at the sides of the ventilators shall be continuous and shall have three-point contact, that at the head and sill of ventilators shall have two-point contact.

#### **HARDWARE AND FITTINGS**

All ventilators accessible from the floor shall be provided with solid rolled steel push bars and attachment for locking ventilator when closed. All others shall be provided with spring catch, pulley bracket and chain.

Copper plated spring wire clips for glazing, and all necessary clips and bolts for the installation of these sash shall be furnished by the sash contractor.

#### **VERTICAL MULLIONS**

Solid rolled steel adjustable mullions composed of an exterior flat and an interior angle bolted together shall be used between sash units when two or more units occur in an opening.

#### **PAINTING**

All sash and mullions shall be given one dip coat of red oxide paint before shipment.



## Boca Solid Rolled Steel Sections

Experience has led Architects, Engineers, Contractors, and Owners to adopt the use of Steel Sash made of solid rolled steel sections for all types of buildings.

Such sash are less subject to corrosion and are of greater strength than other forms of window construction.

The solid rolled steel sections used exclusively in the manufacture of Boca Solid Steel Sash are shown in actual size below. These sections have been designed to meet the varied requirements of the building trade.

### ACTUAL SIZES



SECTION 101  
Vertical Muntin



SECTION 103  
Horizontal Muntin



SECTION 105  
Weathering Member at  
Head of Ventilator



SECTION 102  
Member for  
Head, Jamb and Sill



SECTION 107  
Member at Head of  
Ventilator



SECTION 106  
Weathering Angle  
at Sill of Ventilator



SECTION 104  
Three-Point Weathering Member  
for Sides of Ventilator



## Boca Solid Rolled Steel Sections

### SECTION 101

This section is used as the vertical interior muntin bars for all Boca sidewall sash.

### SECTION 102

This section is the standard outside member of all Boca sidewall sash. The projecting leg allows for connection to structural steel, brick, concrete work and wood construction. It also permits of adjustment when used in connection with vertical mullions.

### SECTION 103

This section is used as the interior horizontal muntin bars, which lock at intersection with vertical muntin bars (Section 101).

### SECTION 104

This section is used as the weathering member at sides of Boca sash ventilators. By means of the small lip projection, a continuous three-point weathering contact is secured.

### SECTION 105

This section is used as the weathering member at head of Boca sash ventilator, giving in conjunction with ventilator member (Section 107) a continuous two-point weathering contact.

### SECTION 106

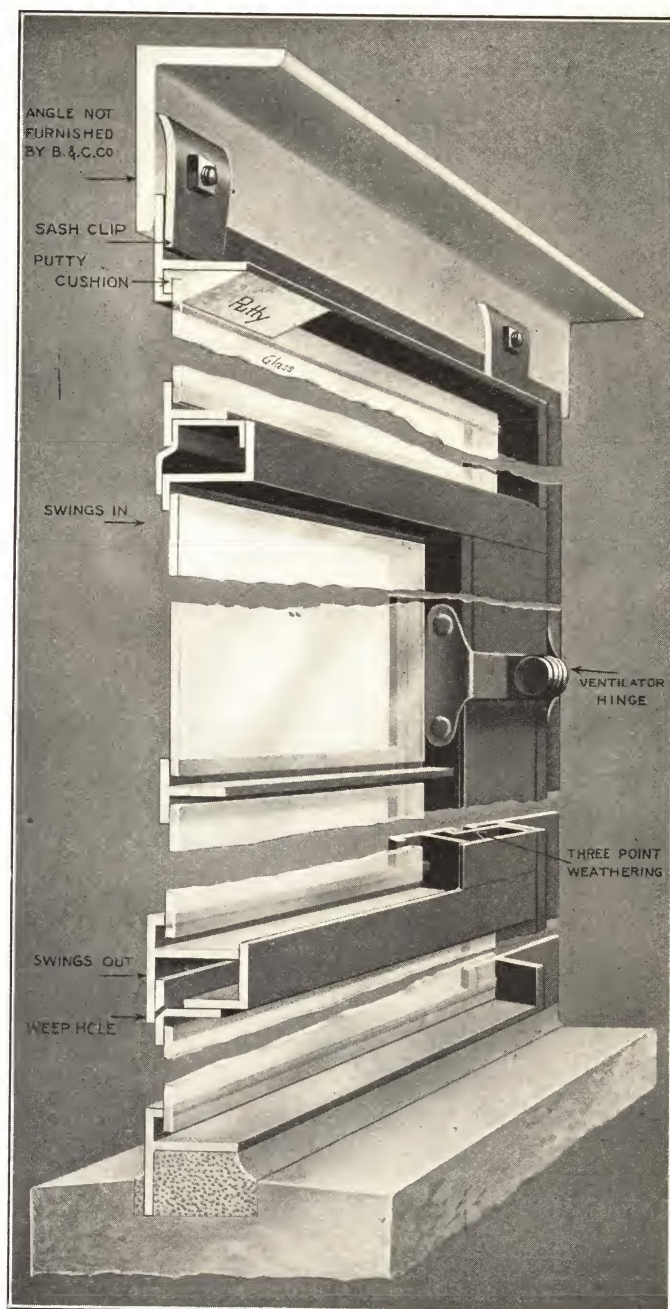
This section is used as the weathering member at the sill of all Boca sash ventilators, giving in conjunction with horizontal muntin (Section 103), a continuous two-point weathering contact.

### SECTION 107

This section is used at the head of all Boca sash ventilators.

### STEEL CLIPS

These are used to fasten the sash units to the structural steel members.



Vertical section of a ventilated Boca sash.

### PUTTY CUSHION

The special lipped tee members (Section 101 and 102), used in Boca sash, permit of this cushion being formed by the putty, which adds to the watertightness of the sash and minimizes the glazing cost through breakage.

### WEEP HOLES

Two of these holes are located at the sill of all Boca sash ventilators to allow for escape of condensation.



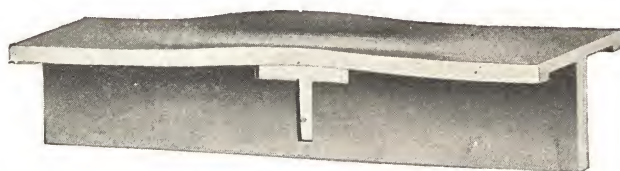
## Boca Sidewall Sash Construction

### BOCA PATENTED LOCK-JOINT

The edges of the lip flange of the vertical muntin bar are pressed back to allow the punching of the tee slot. The flange of the horizontal muntin bar is slotted to receive the lips of the vertical muntin. The horizontal bar is then passed through the vertical muntin and when the slots are in line with the edges of the lip flange of the vertical bar, the edges of the lip flange are pressed back to their original position, and locked in the slots.

The above operation secures a rigid **lock-joint** and one that cannot get out of square. It is accomplished by machine process and eliminates welding.

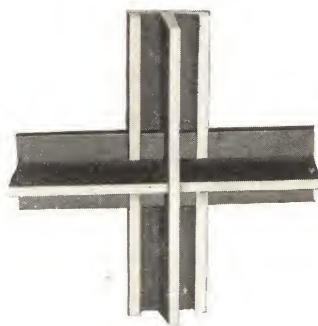
This patented **lock-joint** is used exclusively in the manufacture of Boca solid steel sash and produces a sash of maximum strength and rigidity.



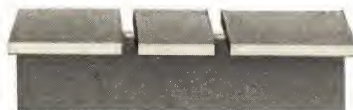
Vertical Muntin Bar



Vertical Muntin with Horizontal Muntin partially inserted



Interior View of Completed Boca Lock-Joint



Horizontal Muntin Bar



Exterior View of Completed Boca Lock-Joint



## Boca Sidewall Sash Construction

### VENTILATORS

Boca standard ventilators are horizontally pivoted two inches (2") above the center. Ventilators so constructed are properly balanced and insure freedom of operation.

Where special conditions apply, ventilators may be pivoted near the top or bottom to meet the requirements.

### VENTILATOR WEATHERING

The ventilators of all Boca sash are equipped with continuous **three-point weathering**. This is accomplished by the use of a specially formed channel section and an external hinge. The channel is so located that when the ventilator is closed the lip on same and the lip on the vertical tee form a continuous two-point contact. The long leg of this channel forms a third continuous contact with the outstanding leg of the vertical tee, thus giving a **three-point** continuous contact which is impervious to rain and storm and is 100% weather-proof.

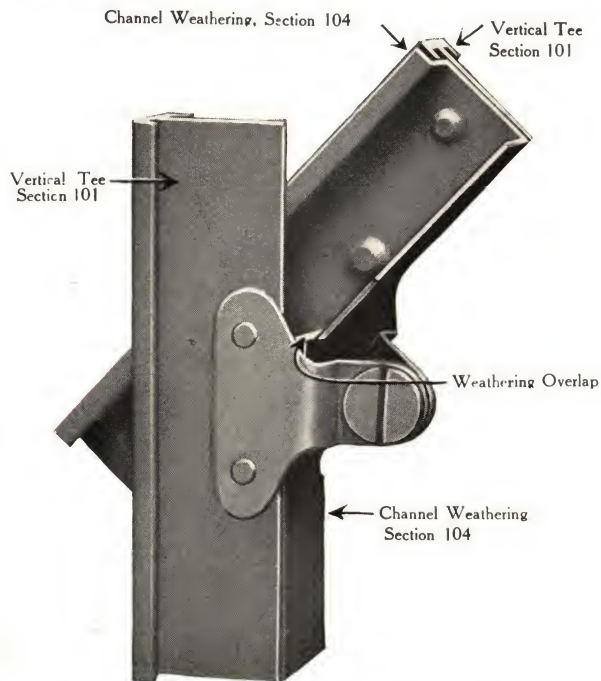
### EXTERNAL HINGE

This hinge, made of pressed steel, is in two parts, one of which is riveted to the sash and the other to the ventilator. The two parts are bolted together, forming a complete hinge. No adjustment of hinge is required as the Boca patented **lock-joint** holds the sash and the ventilator in same rigid and square.

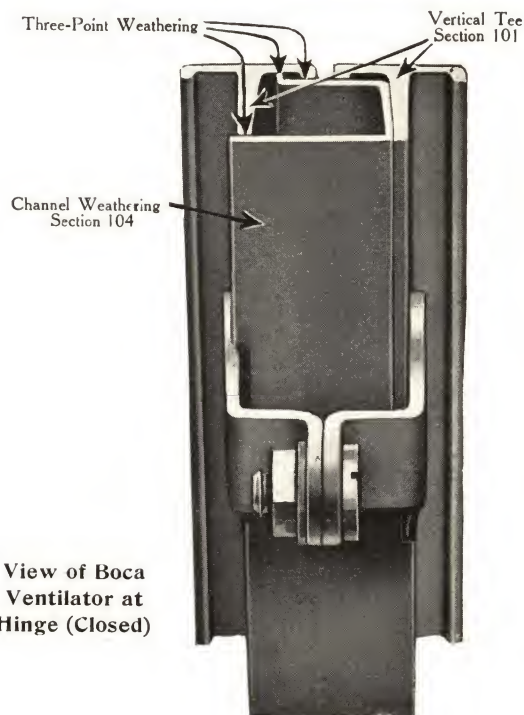
These special features of Boca sash construction are clearly shown in the accompanying illustrations.



Interior View of Boca Sash with Ventilator



View of Boca Ventilator at Hinge (Open)

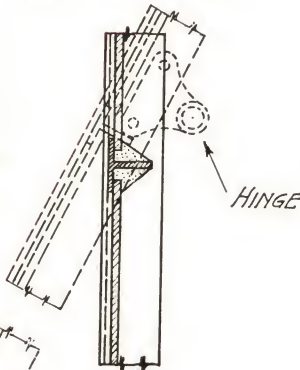
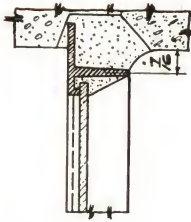


View of Boca Ventilator at Hinge (Closed)

## Boca Sidewall Sash Construction

### VENTILATOR WEATHERING

(One-quarter size)



*HINGE*

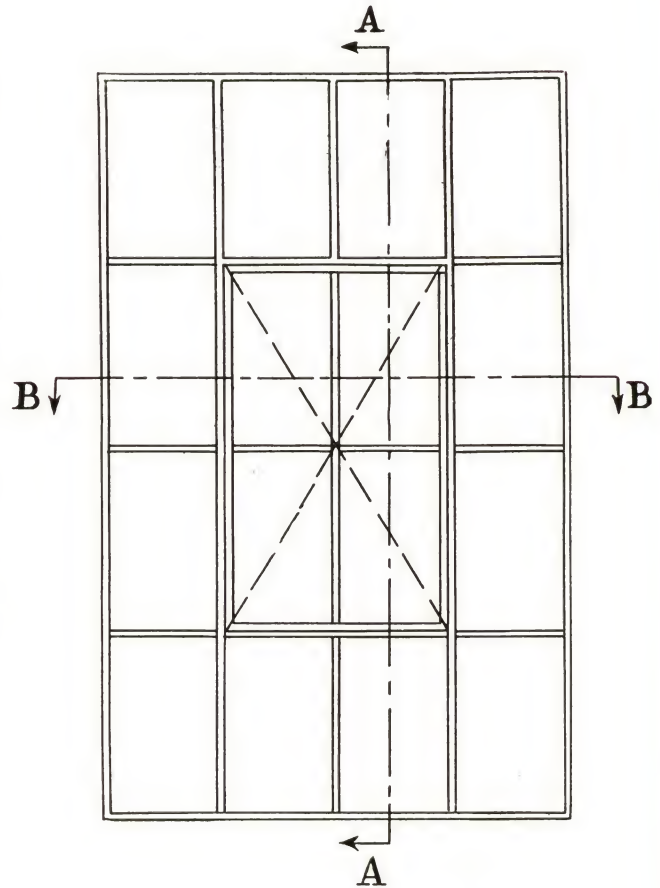


The accompanying illustrations of a ventilated unit of Boca sash, show in detail the construction of the ventilator and method of weathering same.

Special attention is called to the continuous three-point weathering contact shown in Section BB.

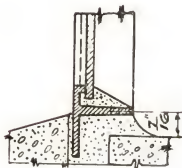
This section shows the ventilator closed and clearly illustrates this special channel forming the continuous three-point weathering contact at the sides of the ventilator.

Section AA shows the method of weathering at the head and sill of the ventilator.

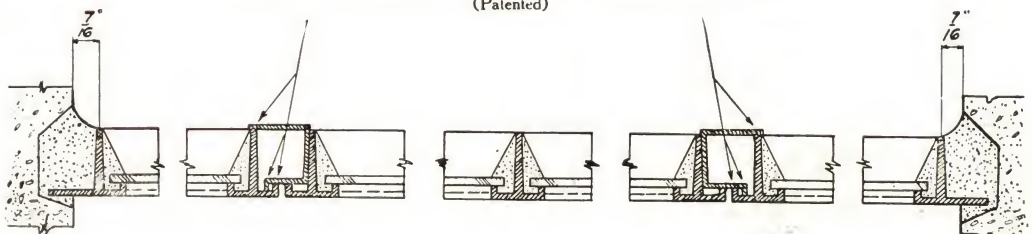


Typical Elevation of Boca Sash

Continuous **three-point weathering contact** at Ventilator.  
(Patented)



Section AA



Section BB



## Boca Sidewall Sash Construction

### HARDWARE



Interior View of Boca Sash Unit.  
Ventilator operated with Spring Catch  
and Chain

**The Push Bar Attachment.** A notched steel push bar is supplied for holding ventilator open and for locking same when closed. Push bars are regularly supplied on all Boca sash ventilators which are within reach, and are applied at the factory. This eliminates the expense of attaching this hardware after arrival at destination.

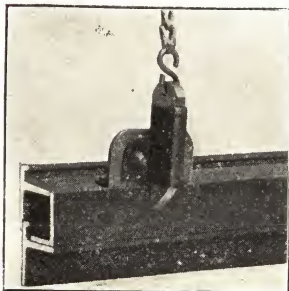
**The Spring Catch.** This attachment is of steel and so designed that it automatically locks the ventilator when closed. These spring catches are regularly applied at the sill of Boca sash ventilators which are out of reach and together with a roller bracket at the top of the ventilator are attached at the factory. Necessary chain for operating ventilators equipped with spring catches is shipped with sash to be attached at destination.



Interior View of Boca Sash Unit.  
Ventilator operated with Push Bar



Push Bar Attachment



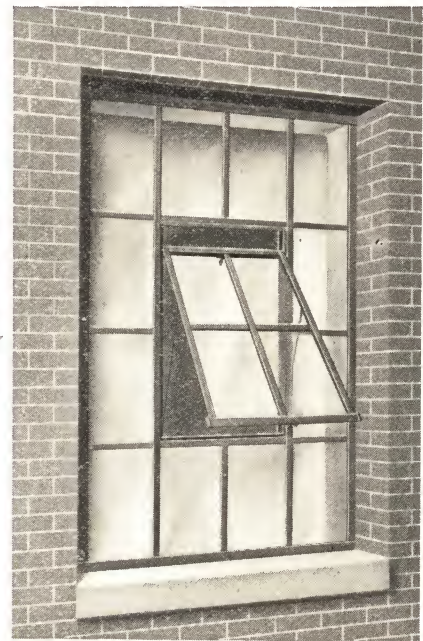
Spring Catch

## Special Ventilators

### "TOP SLIDING" TYPE

The Boca "Top Sliding" Ventilator is so constructed that when opening, the head of the ventilator slides in the plane of the sash while at the same time the sill of the ventilator swings outward. The weight of the ventilator is carried by side arms which balance it so accurately that at slight effort it can be opened to any degree.

This type of ventilator does not project inside the window. It permits the use of shades and screens and can be used to excellent advantage in schools, hospitals, office and public buildings.



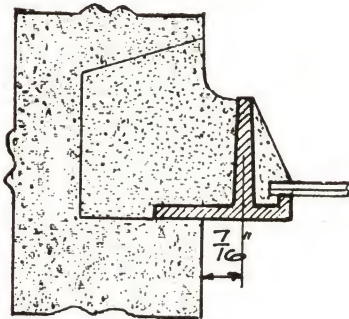
Boca Sash Unit.  
Equipped with "Top Sliding" Ventilator.



# Boca Sidewall Sash Construction at Head, Jamb and Sill

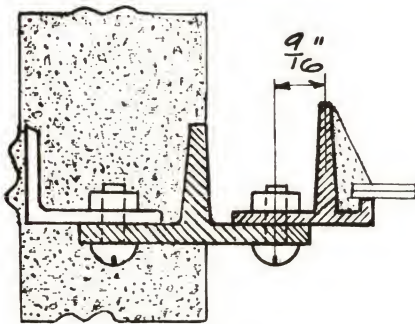
(Details one-half size)

CONCRETE



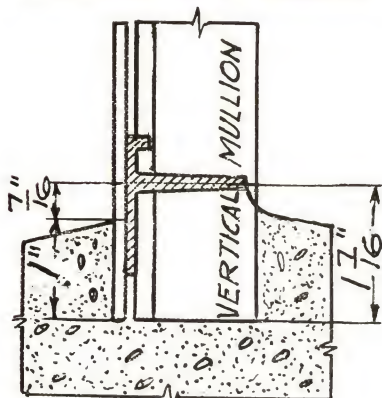
DETAIL 20

Section at head or Jamb  
Groove left in concrete to receive sash  
and grouted after sash is set.



DETAIL 21

Section at Head or Jamb  
Sash bolted to Wall Tee Frame.  
Slotted holes  $\frac{3}{8}$ " x  $\frac{5}{8}$ " in Wall Tee and  
sash member allow for adjustment.



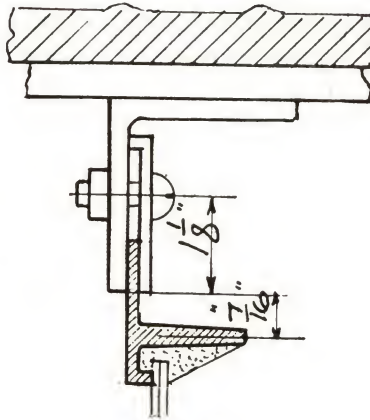
DETAIL 22

Section at Sill  
Showing projection of vertical  
mullion in sill.

## NOTE

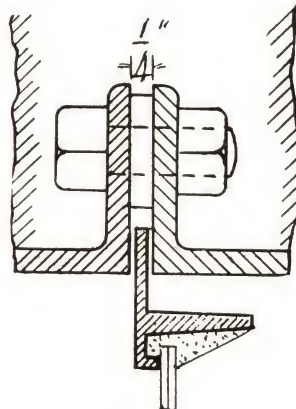
Horizontal Mullions and Wall Tee  
Frames are furnished, only by spe-  
cial arrangement.

BRICK



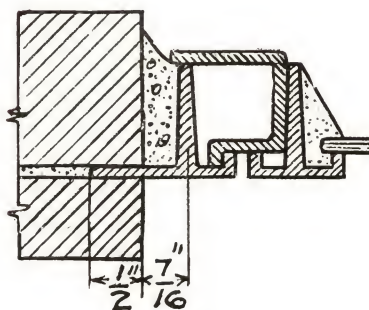
DETAIL 23

Section at Head  
Angle under lintel provided with  $\frac{3}{8}$ "  
holes 1'-6" centers (by others).



DETAIL 24

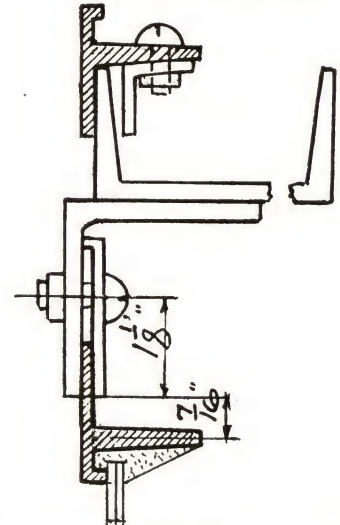
Section at Head  
Sash held in place by lintel.



DETAIL 25

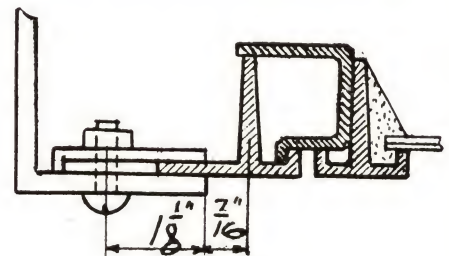
Section at Jamb  
Sash built in joint of brickwork.

STRUCTURAL STEEL



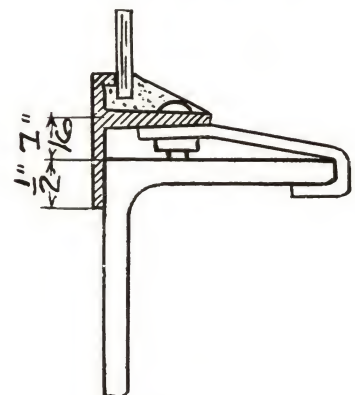
DETAIL 26

Section at Horizontal Mullion  
Sash secured above and below same by  
clips and  $\frac{5}{16}$ " bolts furnished with sash.



DETAIL 27

Section at Jamb  
Sash secured by clips and  $\frac{5}{16}$ " bolts  
furnished with sash.



DETAIL 28

Section at Sill.  
Sash secured by clamps furnished  
with sash.



## Types of Boca Sidewall Sash (Standard)

	3	3	4	4	5	5	6	6
Type A	2'8"	2'8"	3'6 <sup>3</sup> / <sub>8</sub> "	3'6 <sup>3</sup> / <sub>8</sub> "	4'4 <sup>3</sup> / <sub>4</sub> "	4'4 <sup>3</sup> / <sub>4</sub> "	5'3 <sup>1</sup> / <sub>8</sub> "	5'3 <sup>1</sup> / <sub>8</sub> "
Type B	3'2"	3'2"	4'2 <sup>7</sup> / <sub>8</sub> "	4'2 <sup>7</sup> / <sub>8</sub> "	5'2 <sup>3</sup> / <sub>4</sub> "	5'2 <sup>3</sup> / <sub>4</sub> "	6'3 <sup>1</sup> / <sub>8</sub> "	6'3 <sup>1</sup> / <sub>8</sub> "
Type C	3'8"	3'8"	4'10 <sup>3</sup> / <sub>8</sub> "	4'10 <sup>3</sup> / <sub>8</sub> "	6'0 <sup>3</sup> / <sub>4</sub> "	6'0 <sup>3</sup> / <sub>4</sub> "	7'3 <sup>1</sup> / <sub>8</sub> "	7'3 <sup>1</sup> / <sub>8</sub> "
2 lights								
	A 32 B 32 C 32	A 32x6 B 32x6 C 32x6	A 42 B 42 C 42	A 42x4 B 42x4 C 42x4	A 52 B 52 C 52	A 52x6 B 52x6 C 52x6	A 62 B 62 C 62	A 62x8 B 62x8 C 62x8
3 lights								
	A 33 B 33 C 33	A 33x6 B 33x6 C 33x6	A 43 B 43 C 43	A 43x4 B 43x4 C 43x4	A 53 B 53 C 53	A 53x6 B 53x6 C 53x6	A 63 B 63 C 63	A 63x8 B 63x8 C 63x8
4 lights								
	A 34 B 34 C 34	A 34x6 B 34x6 C 34x6	A 44 B 44 C 44	A 44x8 B 44x8 C 44x8	A 54 B 54 C 54	A 54x6 B 54x6 C 54x6	A 64 B 64 C 64	A 64x8 B 64x8 C 64x8
5 lights								
	A 35 B 35 C 35	A 35x6 B 35x6 C 35x6	A 45 B 45 C 45	A 45x8 B 45x8 C 45x8	A 55 B 55 C 55	A 55x6 B 55x6 C 55x6	A 65 B 65 C 65	A 65x8 B 65x8 C 65x8
6 lights								
	A 36 B 36 C 36	A 36x6 B 36x6 C 36x6	A 46 B 46 C 46	A 46x8 B 46x8 C 46x8	A 56 B 56 C 56	A 56x6 B 56x6 C 56x6	A 66 B 66 C 66	A 66x8 B 66x8 C 66x8
7 lights								
Type A	A 37	A 37Y6	A 47	A 47Y4	A 57	A 57Y6	A 67	A 67Y8
Type B	B 37	B 37Y6	B 47	B 47Y4	B 57	B 57Y6	B 67	B 67Y8
Type C	C 37	C 37Y6	C 47	C 47Y4	C 57	C 57Y6	C 67	C 67Y8

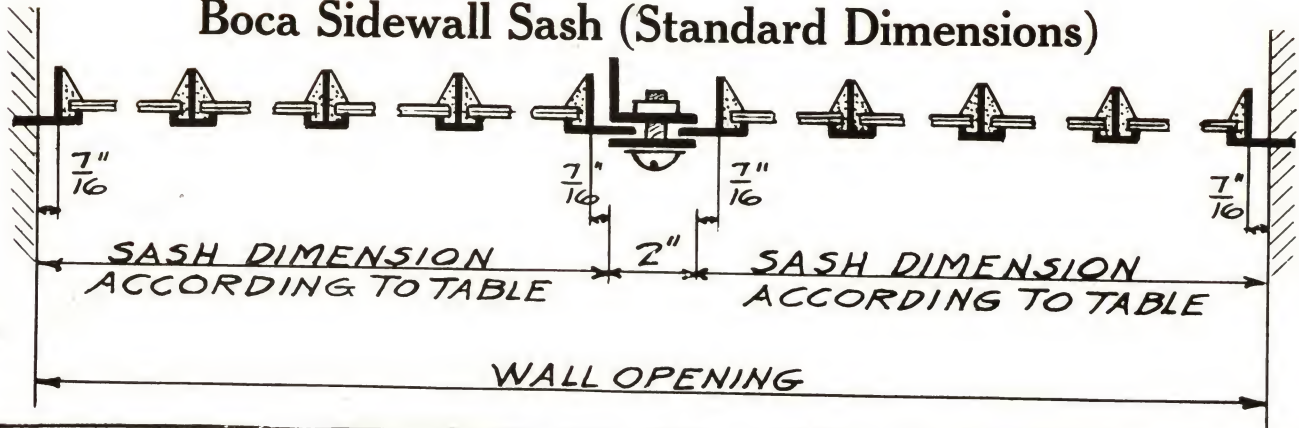
### EXPLANATION OF NUMBERING CODE

In the standards given above, the first letter indicates the size of glass; A represents 10 x 16 inch, B, 12 x 18 inch, and C, 14 x 20 inch pane size. The first numeral following the letter A, B or C indicates the number of lights in width and the second numeral, the number of lights in height in the sash. The letter following these two numerals indicates the number of ventilators in sash; X for one, Y for two ventilators. The figure following this letter indicates the number of lights in ventilator. Thus C54 X 6, is a sash taking 14 x 20 inch glass, five lights wide, four lights high, equipped with one ventilator of six lights.

Measurements given above are wall openings. Measurements for overall width and height of sash are 1 inch greater than wall openings, that is, sash project into masonry 1/2 inch on all four sides.



## Boca Sidewall Sash (Standard Dimensions)



### Height Dimensions, Standard Sash

No. Lts. in Height of Opening	No. Units High	No. Lights in Height of Units	12" x 18" Glass	14" x 20" Glass
2	1	2	3' 1 5/8"	3' 5 5/8"
3	1	3	4' 8"	5' 2"
4	1	4	6' 2 3/8"	6' 10 3/8"
5	1	5	7' 8 3/4"	8' 6 3/4"
6	1	6	9' 3 1/8"	10' 3 1/8"
7	1	7	10' 9 1/2"	11' 11 1/2"

### Width Dimensions, Standard Sash

The widths shown in any column below can be furnished in any of the heights shown in the same column above

No. Lights. in Width of Opening	No. Units Wide	No. Lights in Width of Units	12" x 18" Glass	14" x 20" Glass
3	1	3	3' 2"	3' 8"
4	1	4	4' 2 3/8"	4' 10 3/8"
5	1	5	5' 2 3/4"	6' 0 3/4"
6	1	6	6' 3 1/8"	7' 3 1/8"
6	2	3, 3	6' 6"	7' 6"
8	2	4, 4	8' 6 3/4"	9' 10 3/4"
9	3	3, 3, 3	9' 10"	11' 4"
10	2	5, 5	10' 7 1/2"	12' 3 1/2"
10	3	3, 4, 3	10' 10 3/8"	12' 6 3/8"
11	3	3, 5, 3	11' 10 3/4"	13' 8 3/4"
11	3	4, 3, 4	11' 10 3/4"	13' 8 3/4"
12	2	6, 6	12' 8 1/4"	14' 8 1/4"
12	3	4, 4, 4	12' 11 1/8"	14' 11 1/8"
12	3	3, 6, 3	12' 11 1/8"	14' 11 1/8"
13	3	4, 5, 4	13' 11 1/2"	16' 1 1/2"
13	3	5, 3, 5	13' 11 1/2"	16' 1 1/2"
14	3	5, 4, 5	14' 11 1/8"	17' 3 1/8"
14	3	4, 6, 4	14' 11 1/8"	17' 3 1/8"





## Boca Sidewall Sash (Standard Dimensions)

No. Lights In Width of Opening	No. Units Wide	No. Lights in Width of Units	12" x 18" Glass	14" x 20" Glass
14	4	3, 4, 4, 3	15' 2 $\frac{3}{4}$ "	17' 6 $\frac{3}{4}$ "
15	3	5, 5, 5	16' 0 $\frac{1}{4}$ "	18' 6 $\frac{1}{4}$ "
15	3	6, 3, 6	16' 0 $\frac{1}{4}$ "	18' 6 $\frac{1}{4}$ "
16	3	5, 6, 5	17' 0 $\frac{5}{8}$ "	19' 8 $\frac{5}{8}$ "
16	3	6, 4, 6	17' 0 $\frac{5}{8}$ "	19' 8 $\frac{5}{8}$ "
16	4	4, 4, 4, 4	17' 3 $\frac{1}{2}$ "	19' 11 $\frac{1}{2}$ "
17	3	6, 5, 6	18' 1"	20' 11"
18	3	6, 6, 6	19' 1 $\frac{3}{8}$ "	22' 1 $\frac{3}{8}$ "
18	4	4, 5, 5, 4	19' 4 $\frac{1}{4}$ "	22' 4 $\frac{1}{4}$ "
18	4	3, 6, 6, 3	19' 4 $\frac{1}{4}$ "	22' 4 $\frac{1}{4}$ "
19	5	5, 3, 3, 3, 5	20' 7 $\frac{1}{2}$ "	23' 9 $\frac{1}{2}$ "
20	4	5, 5, 5, 5	21' 5"	24' 9"
20	4	4, 6, 6, 4	21' 5"	24' 9"
20	5	4, 4, 4, 4, 4	21' 7 $\frac{7}{8}$ "	24' 11 $\frac{7}{8}$ "
20	5	3, 4, 6, 4, 3	21' 7 $\frac{7}{8}$ "	24' 11 $\frac{7}{8}$ "
21	5	4, 4, 5, 4, 4	22' 8 $\frac{1}{4}$ "	26' 2 $\frac{1}{4}$ "
21	5	3, 5, 5, 5, 3	22' 8 $\frac{1}{4}$ "	26' 2 $\frac{1}{4}$ "
21	5	3, 6, 3, 6, 3	22' 8 $\frac{1}{4}$ "	26' 2 $\frac{1}{4}$ "
22	4	5, 6, 6, 5	23' 5 $\frac{3}{4}$ "	27' 1 $\frac{3}{4}$ "
22	5	4, 4, 6, 4, 4	23' 8 $\frac{5}{8}$ "	27' 4 $\frac{5}{8}$ "
22	5	4, 5, 4, 5, 4	23' 8 $\frac{5}{8}$ "	27' 4 $\frac{5}{8}$ "
22	5	3, 5, 6, 5, 3	23' 8 $\frac{5}{8}$ "	27' 4 $\frac{5}{8}$ "
22	6	3, 4, 4, 4, 4, 3	23' 11 $\frac{1}{2}$ "	27' 7 $\frac{1}{2}$ "
22	6	3, 3, 5, 5, 3, 3	23' 11 $\frac{1}{2}$ "	27' 7 $\frac{1}{2}$ "
23	5	4, 5, 5, 5, 4	24' 9"	28' 7"
23	5	3, 6, 5, 6, 3	24' 9"	28' 7"
24	4	6, 6, 6, 6	25' 6 $\frac{1}{2}$ "	29' 6 $\frac{1}{2}$ "

### EXPLANATION OF TABLE

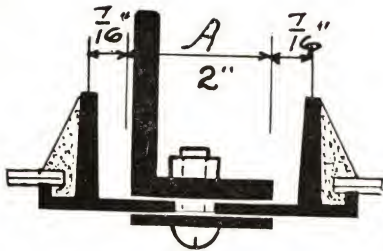
Suppose steel sash are required for a wall opening 9'-10 $\frac{3}{4}$ " wide by 8'-6 $\frac{3}{4}$ " high. By reference to table of Width Dimensions for Standard Sash, it is found that this dimension will require type C sash (14" x 20" glass size). Opposite this width dimension in the second and third columns, it is found that two units of sash, each four lights wide are required. By similar reference to table of Height Dimensions for Standard Sash it is found that a unit of sash five lights high is required. In other words this opening would require two sash units, 14 x 20 glass size, each four lights wide and five lights high symbolized 2 Sash C45.

Where two or more sash occur in an opening the width dimensions given in the above table include 2" for each mullion.

In designing and preparing plans for buildings the use of steel sash of **Standard Dimensions** is recommended, as **prompt delivery** and **saving in cost** are assured. Sash type C (14 x 20 glass size) are the most economical.



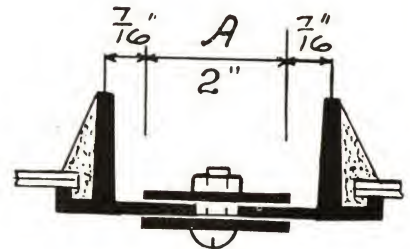
## Boca Sidewall Sash Construction



STANDARD MULLION M-M

### ADJUSTABLE MULLIONS

(Details one-half size)



SPECIAL MULLION N-N

These adjustable mullions permit Boca steel sash, when used in multiples, to fit openings varying slightly in width from the standard dimensions. Each Boca adjustable mullion permits a variation of  $\frac{3}{8}$  inch.

The Boca standard mullion M-M consists of a 2" x  $1\frac{1}{2}$ " x  $\frac{3}{16}$ " angle, and a 2" x  $\frac{1}{8}$ " flat bolted every fifteen inches, engaging the projecting leg of the outside vertical member (Section 102) of sash units.

The Boca special mullion N-N consists of two flats 2" x  $\frac{1}{8}$ " bolted every 15 inches, and may be used where height of mullion does not exceed 6'-3".

### GENERAL INFORMATION

**Boca Glazing Clips** are made of copper plated spring steel wire. A necessary supply of these is furnished with each sash order.

All **Boca Steel Sash** and **Mullions** receive a dip coat of red oxide paint before shipment from factory.

Clips and bolts for fastening sash to structural steel work are supplied where necessary.

## Boca Underwriters' Labeled Sash

Complete fire tests of Boca solid steel sash have been made by the Underwriters' Laboratories, Inc. This sash has been approved, and now carries the Underwriters' Labeled Service.

Ample protection against fire is assured by the use of Boca standard steel sash, especially if glazed with wire glass. Special conditions, however, require the use of Boca Underwriters' Labeled Sash to comply with fire ordinances and insurance regulations.

Boca Underwriters' Labeled Sash are identical with Boca standard sash as to appearance, location of ventilator, and method of installation, the difference in construction being that tee bar mullions are used and glazing angles are furnished for holding the glass in position. Ventilators are equipped with special gravity latches which lock automatically.



## Boca Basement Sash

Boca basement sash are made of Boca solid steel sections, (101 and 102). They give maximum light, strength and durability at minimum cost. Their construction embodies these features and offers a safeguard against fire, burglars and other intruders.

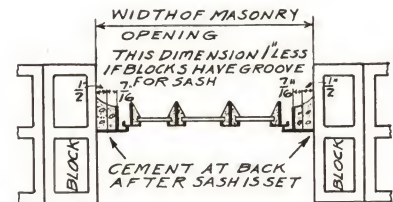
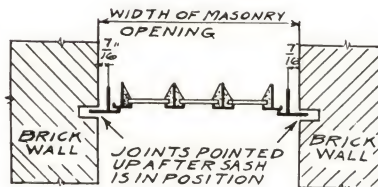
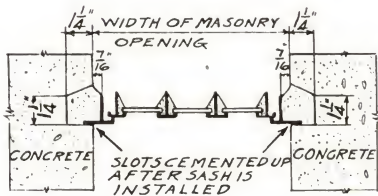
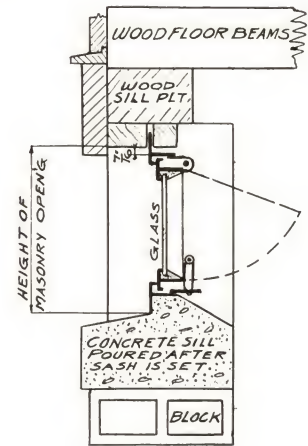
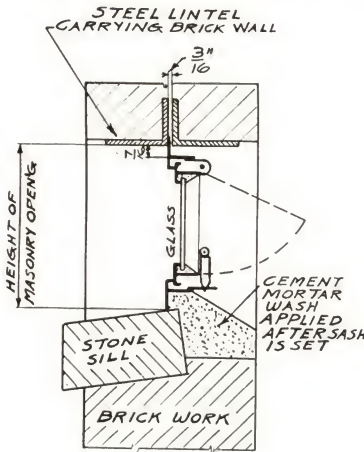
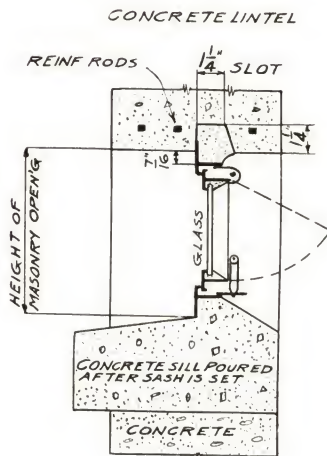
The ventilator swings in and is equipped at the head with standard Boca hinges and at the sill with a standard Boca spring catch which automatically locks the ventilator when closed. The sash is fitted into the exterior frame and all hardware is attached at the factory, so that when shipped, it is complete ready for installation.

Holes for screws are provided in the frame for attaching screens.

TYPE	WIDTH	HEIGHT	NO. LIGHTS	LIGHT SIZE
A3	2'-9 1/2"	1'-7"	3	10" x 16"
B3	3'-3 1/2"	1'-9"	3	12" x 18"
C2	2'-7"	1'-7"	2	14" x 16"
D2	2'-7"	1'-9"	2	14" x 18"

These dimensions are brick and concrete wall openings. In terra cotta or concrete block walls add one inch to width.

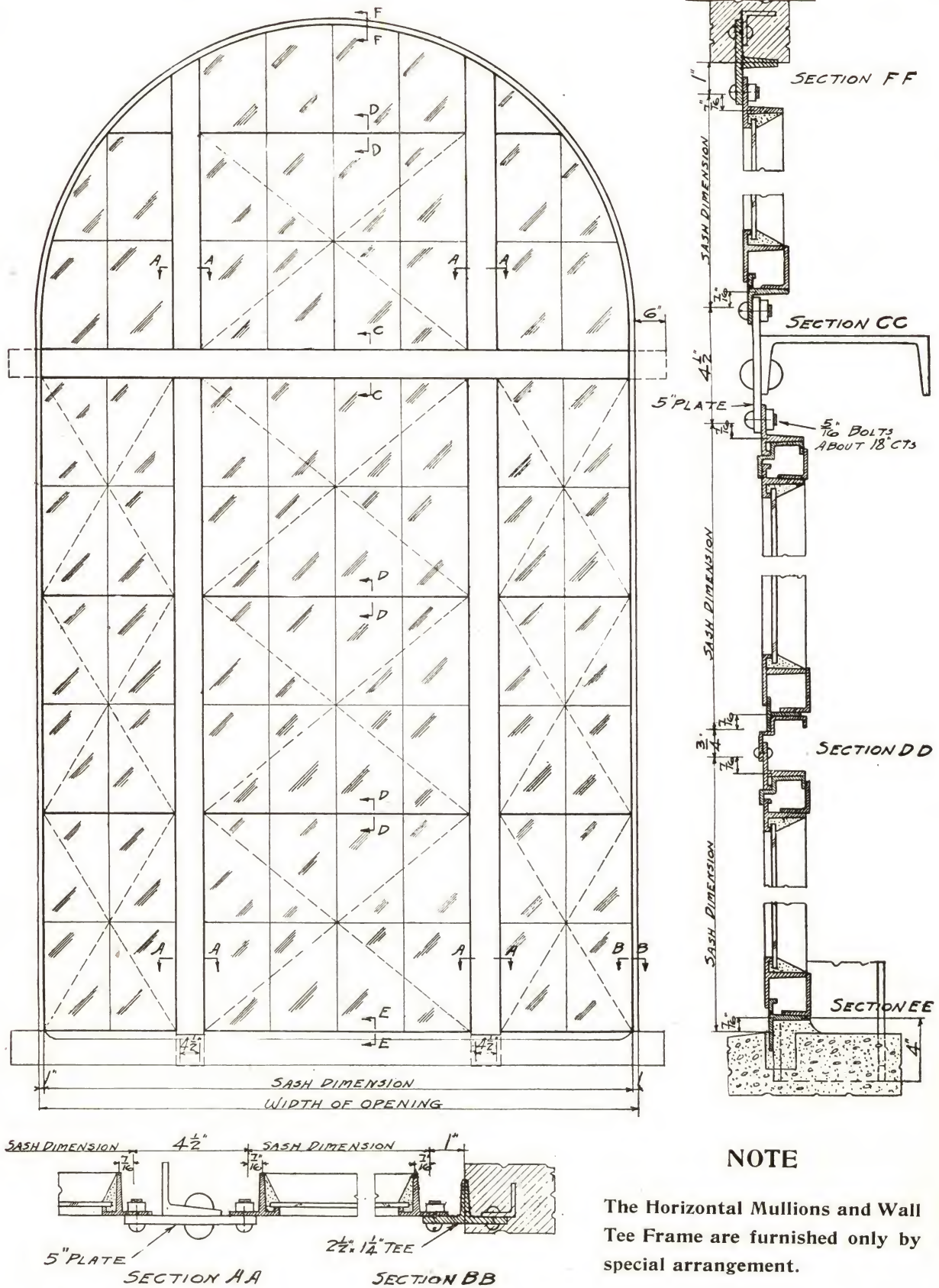
### HEAD, JAMB AND SILL CONSTRUCTION



Installations of Boca Basement Sash, (Exterior and Interior Views)



## Boca Power House Sash





## Boca Power House Sash



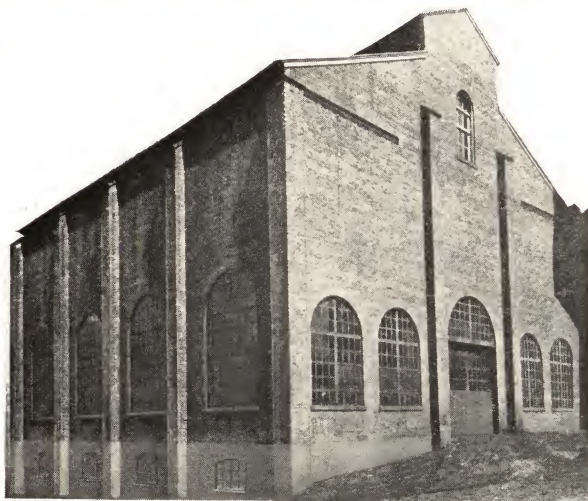
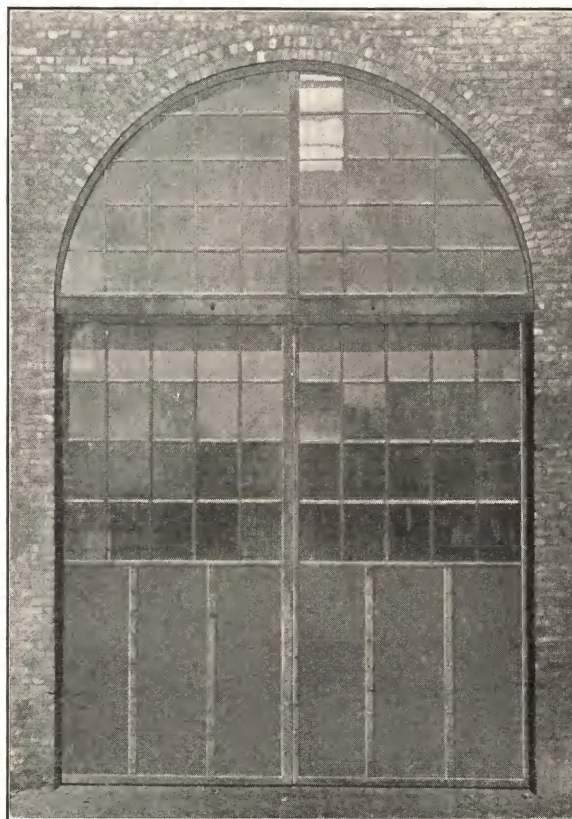
National Aniline and Chemical Works, Brooklyn, N. Y.

### CONSTRUCTION

Boca power house sash are constructed of Boca sidewall sash units bolted in position to the wall tee and to the horizontal and vertical mullions. That portion above the horizontal mullion, known as the head of the sash, may be of either **standard** or **radial** type.

The horizontal mullions consist of a plate riveted to the flange of a channel, and extend into the wall at each end. The vertical mullions may be of similar construction or of standard mullion construction shown on page 14.

These views show installations of Boca power house sash. The upper illustration shows the heads of sash of radial type, the lower views show an installation of sash with heads of standard type.



Joseph Chadwick & Son Power House, Newburgh, N. Y.





## Boca Continuous Sash

### CONSTRUCTION

Boca continuous sash are made from solid rolled steel sections. The head member is a 2" x 1½" x ⅜" angle, while the sill is a specially rolled section. The intermediate members are Boca tees (Section 101), and the vertical end members are 1¼" x 1¼" x ⅜" angles. All members are carefully fitted together and welded in position, insuring a strong and durable construction.

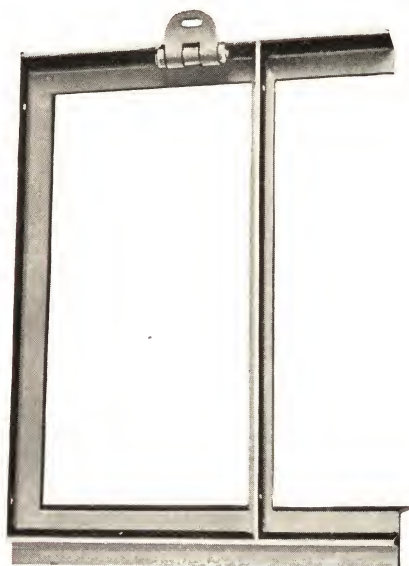
The hinges are of malleable iron with bronze pin, and are bolted to the panels 2 feet from each end and 4 feet on centers.

Boca glazing clips are supplied and the vertical members are punched to receive same.

### TYPES AND SIZES

Boca continuous sash are of three types, **Top Hung**, **Fixed** and **Center Pivoted**. They are designed for use in sawtooth and monitor roof construction and in sidewalls of buildings. They are made in standard panels 20 feet long and of standard heights (S) given in table on opposite page.

Special panels may be supplied in lengths of 10, 12, 14, 16, and 18 feet.



Exterior View of Boca Continuous Sash  
(Top Hung Type.)



Gillespie Eden Corporation, Paterson, N. J.

Installation of Boca continuous sash, top hung type, equipped with rack and pinion mechanical operator



Peerless Plush Mfg. Co., Paterson, N. J.

Installation of Boca continuous sash, upper panels top hung, lower panels fixed



## Boca Continuous Sash

HEIGHT OF SASH, GLASS AND CLEAR OPENING		
HEIGHT (S)	HEIGHT (O)	GLASS H'GT
3'-0"	2'-10 $\frac{1}{2}$ "	2'-10"
4'-0"	3'-10 $\frac{1}{2}$ "	3'-10"
5'-0"	4'-10 $\frac{1}{2}$ "	4'-10"
6'-0"	5'-10 $\frac{1}{2}$ "	5'-10"

### STORM AND FIXED PANEL WEATHERING

These panels are placed at the ends of the top hung and center pivoted types, and vary in width to meet the building requirements. The storm panel is 2 feet wide and is placed directly back of the end light of the hinged sash. Forming an integral part of this storm panel is a fixed panel, the width of which varies to fill the opening measurements.

This construction affords a continuous opening for ventilation while at the same time the interior of building is protected against weather and slanting rains.

### FIXED TYPE WEATHERING

Where Boca continuous sash of this type are used, a weathering member fastened to the building construction is overlapped by a channel riveted to the extreme panel ends. This allows for field adjustment and affords a weatherproof construction.

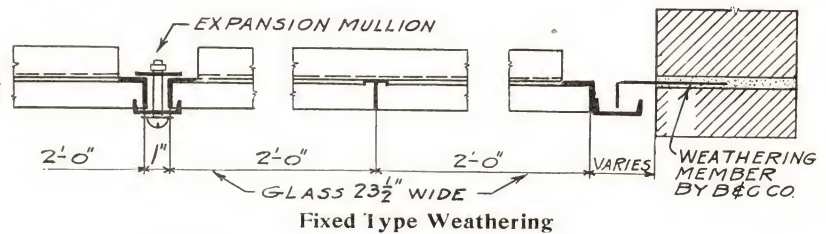
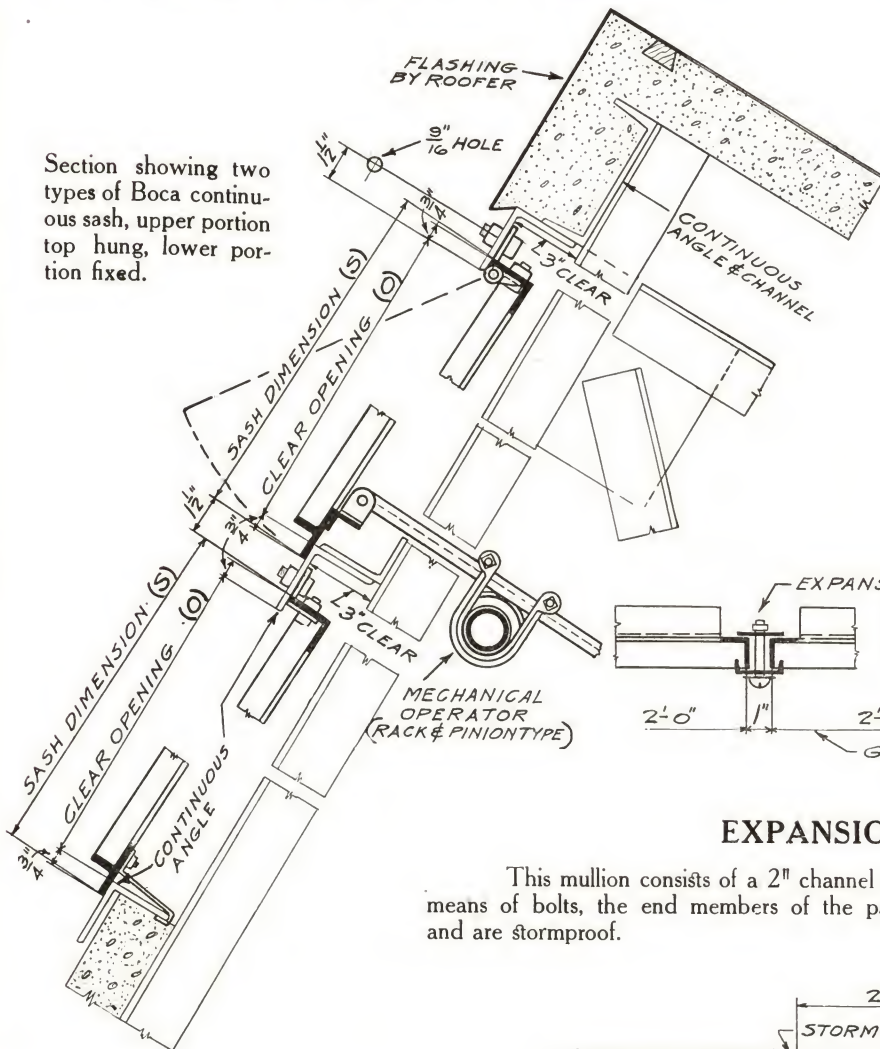
### MECHANICAL OPERATORS

These are of three types, **Rocker Shaft, Rack and Pinion and Tension** type.

Rocker shaft operators are used for operating runs or batteries of ventilators in Boca sidewall sash.

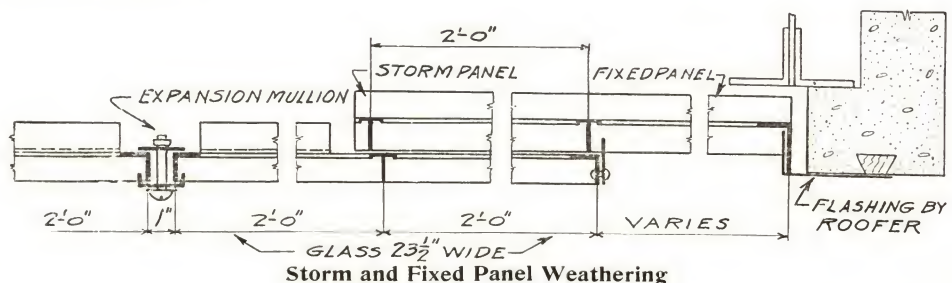
Rack and pinion type operators are used for operating top hung or center pivoted Boca continuous sash in runs up to 100 feet. When such runs exceed 100 feet the tension type is used.

Section showing two types of Boca continuous sash, upper portion top hung, lower portion fixed.



### EXPANSION MULLION

This mullion consists of a 2" channel outside and a 2" x 1/8" flat inside, engaging by means of bolts, the end members of the panels. These mullions allow for field adjustment and are stormproof.



### NOTE

All structural steel, supports for mechanical operators, and punching or drilling of same are included only by special arrangement.

## Boca Steel Doors

### HINGED TYPE

The stiles of these doors are made of seamless rectangular steel tubing  $2\frac{1}{2}$  inches in width and  $1\frac{1}{2}$  inches in depth, accurately mitred and welded at corners. The intermediate horizontal member is of the same material welded in position. The upper panel consists of a Boca sash unit securely bolted in place. The lower panel consists of a  $\frac{1}{8}$  inch steel plate and an  $1\frac{1}{4}$  inch x  $\frac{7}{8}$  inch x  $\frac{1}{8}$  inch angle riveted along its edges and bolted in position.

The hardware for these doors consists of handle, knob, lock, and three sets of hinges, and is attached at the factory. Panic bolts, where required, are supplied at additional cost.

### SLIDING TYPE

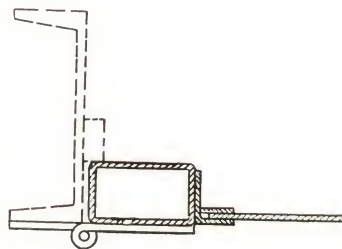
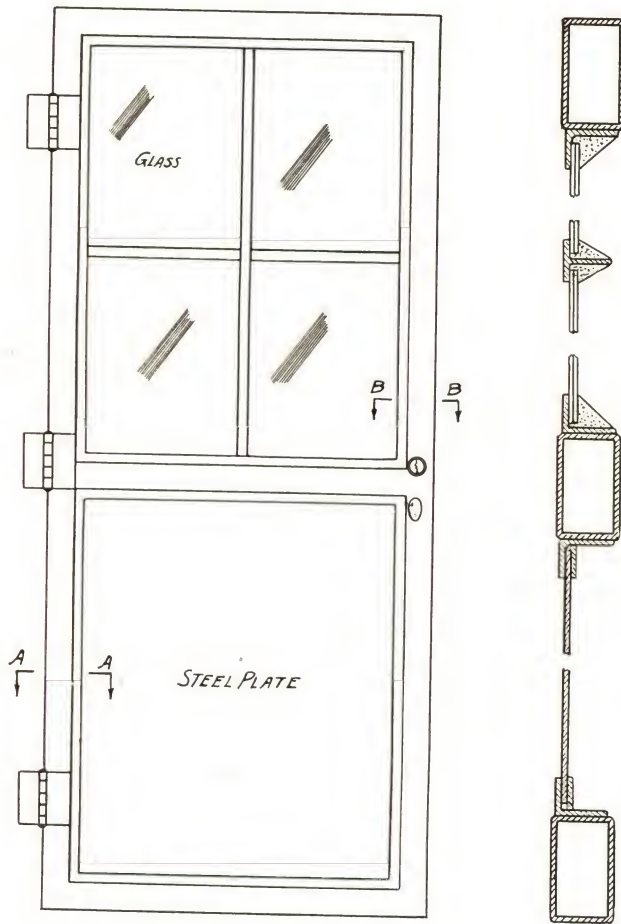
The construction of these doors is similar to that of the hinged type described above.

These doors are equipped at the factory with hasp and staple hardware, and when in pairs, a floor bolt for each door is supplied. Overhead track and hangers are also furnished to be attached at site.

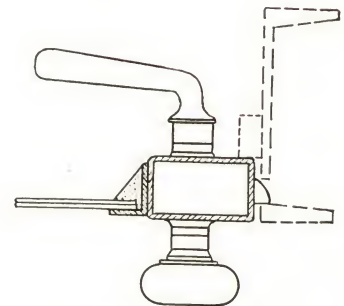
### STRUCTURAL TYPE

Conditions occur where special construction of doors is desired. In such cases the structural type door, made of heavy structural steel members meets the requirements.

Special details will be submitted on request, embodying ideas to meet unusual conditions.



SECTION A-A



SECTION B-B

## Boca Steel Partitions

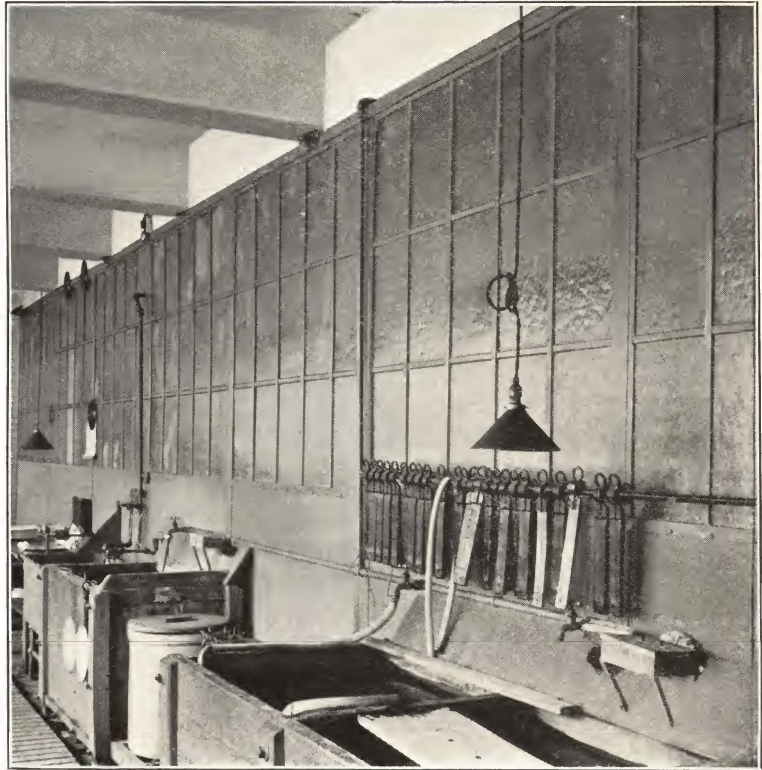
These partitions are constructed of regular sash units joined together with mullions, the lower part of units being of sheet steel. Door jambs, transoms and doors are supplied as required. Partitions are usually of special design to meet specific requirements of offices, warehouses or factories. It is therefore advisable to submit details and dimensions and prepare quotations from such exact information.



## Boca Steel Doors and Partitions



Boca Steel Door, (Hinged Type)



Installation of Boca Steel Partitions at Standard Music Roll Co.  
South Orange, N. J.



Installation of Boca Steel Doors, (Sliding Type) at  
G. W. Case Garage, Port Jervis, N. Y.



Installation of Boca Steel Doors, (Structural Type) at  
Atlantic Gulf and Pacific Co., Brooklyn, N. Y.





## Installations of Boca Steel Sash



Chelsea Moore Corporation Garage, West 23rd Street, New York City  
*Standard Concrete Steel Co., Contractors, New York City*



Public School No. 10, Paterson, N. J.  
*F. W. Wentworth, Architect, Paterson, N. J.*



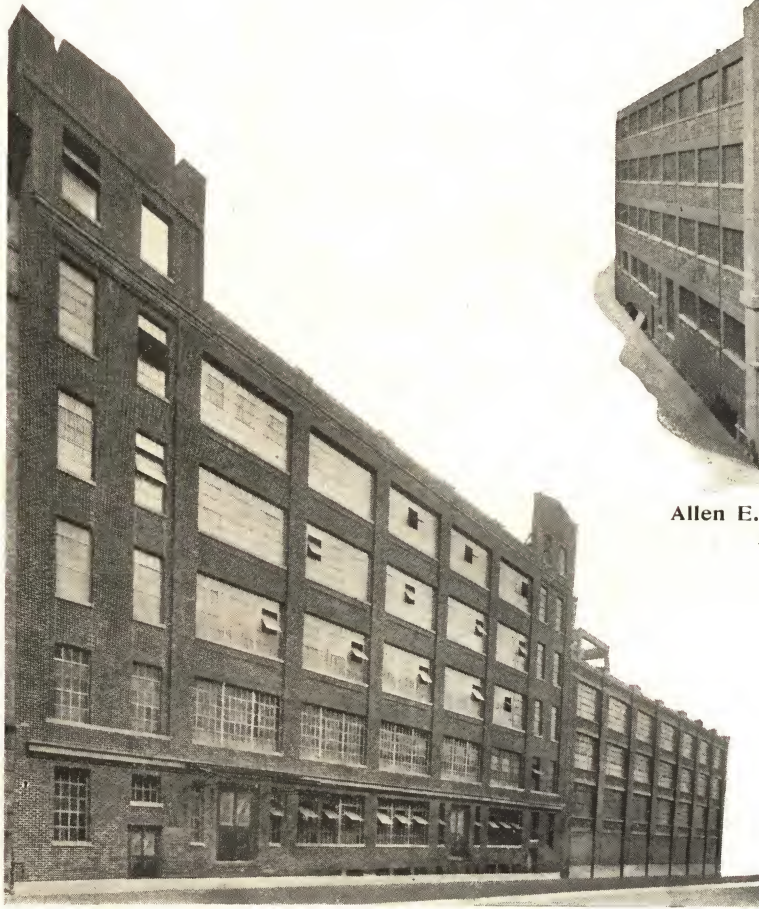


**Packard Motor Sales & Service Building, Springfield, Mass.**  
*Samuel M. Green Co., Contractors, Springfield, Mass.*

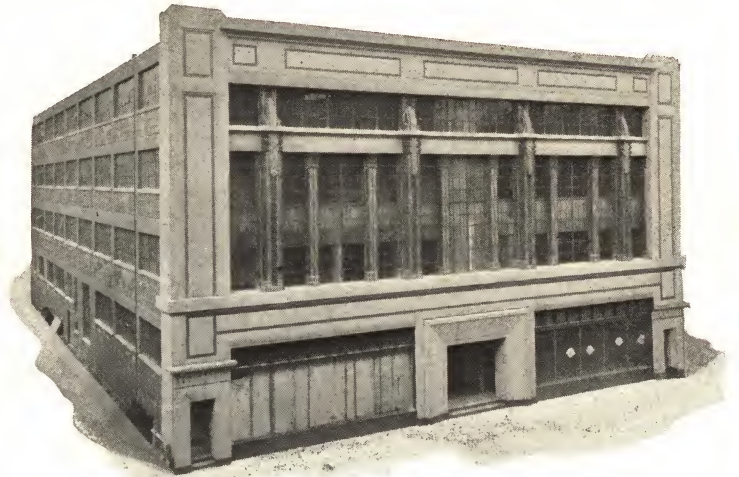


**Packard Motor Sales & Service Building, (Interior) Springfield, Mass.**  
*Samuel M. Green Co., Contractors, Springfield, Mass.*





**Kiowa Realty Co. Building, East 56th Street, New York City**  
*B. E. Stern, Architect, New York City, D. C. Weeks & Son, Contractors, New York City*

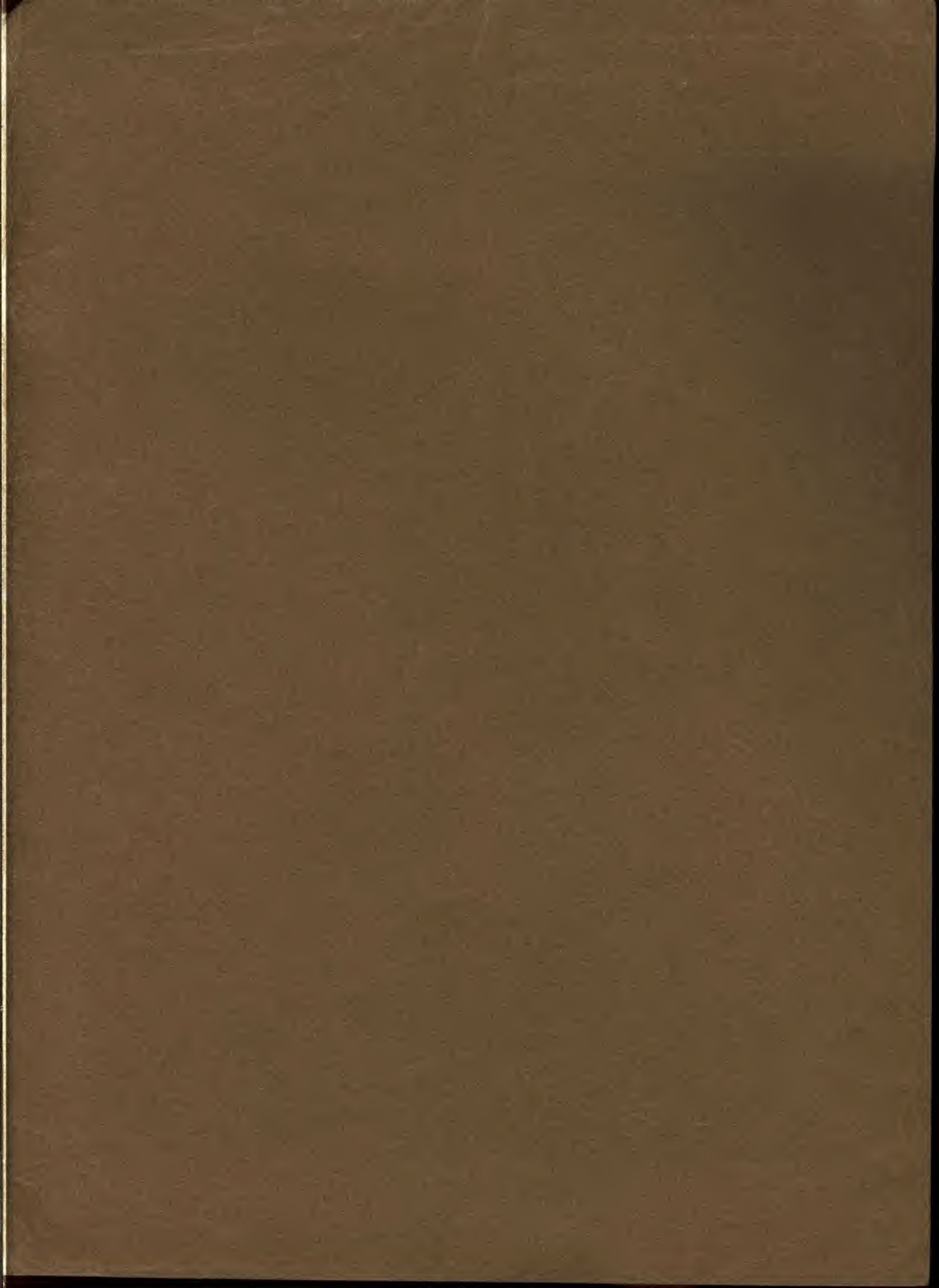


**Allen E. Walker & Co. Building, Washington, D. C.**  
*E. H. Mosher, Contractor, Washington, D. C.*



**Mausey Silk Mill, Newton, N. J.**  
*Salmond, Scrimshaw Co., Contractors, Arlington, N. J.*





C. L. CRAWFORD  
209 LEHIGH TRAIL  
PRINCETON, N. J.  
PHONE UNION 1234